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BIOPESTICIDES REGISTRATION ACTION DOCUMENT

Extract of Chenopodium *ambrosioides* near *ambrosioides*

(PC Code 599995)

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U.S. Environmental Protection Agency
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division

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BIOPESTICIDES REGISTRATION ACTION DOCUMENT TEAM

Office of Pesticide Programs:

Biopesticides and Pollution Prevention Division

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I. Executive Summary:

Extract of Chenopodium *ambrosioides* near *ambrosioides* (ECANA) is classified as a technical grade of the active ingredient (TGAI). The extract is derived from the flowering plant Chenopodium *ambrosioides* near *ambrosioides*, commonly known as American Wormseed. It is intended for use as an insecticide and acaricide on field and container-grown non-food ornamental plants in commercial nurseries, greenhouses, and lath- and shade houses. The end use product submitted in conjunction with this TGAI product contains 25% extract in the formulation. The extract is reported to work through a "non-toxic" mode of action by temporarily softening an insect's cuticles, which then leads to a disruption in respiration.

Product chemistry data requirements (product identity, product analysis, manufacturing process, and physical/chemical properties) were satisfied by acceptable guideline studies or waiver rationales.

Mammalian toxicology data requirements (acute oral, acute dermal, acute inhalation, dermal irritation, ocular irritation, hypersensitivity, 90-day oral, dermal and inhalation, prenatal development, and immunotoxicology) were satisfied by acceptable guideline studies or waiver rationales.

Ecological toxicity data requirements (avian acute oral and dietary, freshwater fish LC_{50}, freshwater invertebrate LC_{50}, non-target plant toxicity, non-target plant toxicity) were fulfilled by acceptable guideline studies or waiver rationales.

No significant issues were identified for dietary risk, residential risk, or ground and surface water contamination from the use of ECANA as an active ingredient. Some risks from the use of ECANA as an active ingredient were identified for occupational professions. However, risks to these populations were acceptably mitigated through the inclusion of additional personal protective equipment (PPE).

Some risks from the use of ECANA as an active ingredient were identified for threatened and endangered species. These risks were acceptably mitigated through label provisions requiring spray buffers and an application interval for rain events.

The Agency's risk management decision regarding the registration of ECANA also notes the following: 1) the active ingredient is naturally occurring; 2) pesticidal applications of the extract are for non-food uses; 3) data indicate the extract has a very low mammalian toxicity; and 4) pesticidal residues resulting from the intended method of application have been shown to rapidly degrade in terrestrial environments.

EPA considered ECANA in light of the relevant safety factors in the Food Quality Protection Act (FQPA) of 1996 and under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and has not identified any dietary or non-dietary exposure issues that may affect the U.S. population

in general, including infants and children. The Agency has thereby determined that there is reasonable certainty that no harm will result from aggregate exposure to ECANA residues, including dietary exposures and all other sources of exposure.

II. Overview

A. ACTIVE INGREDIENT OVERVIEW

Common Name: American Wormseed Oil, Chenopodium Oil

Chemical Names: Extract of Chenopodium *ambrosioides* near *ambrosioides*

Trade & Other Names: QRD 406

CAS Registry Number: 89997-47-7

OPP Chemical Code: 599995

Basic Manufacturer: AgraQuest, Inc.
1540 Drew Avenue
Davis, CA 95618

B. USE PROFILE

Pesticide uses and application methods include the following:

Type of Pesticide: Biochemical pesticide; Insecticide, Acaricide

Use Sites: Applied to field and container-grown ornamentals, trees, Christmas trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, and tropical plants not destined for human or animal consumption.

Target Pests: Control of aphids, plant-feeding mites, whiteflies, mealy bugs, leafminers, thrips, fungus gnats, and tarnished plant bugs.

Formulation Type: Liquid

Method and Rates of Application: End-use product, QRD 400, registered concurrently with the TGAI product (manufacturing use product), applied with commonly used ground equipment, hose-end, pressurized, greenhouse, and hand-held sprayers.

QRD 400 contains 25% of the active ingredient. It is diluted with water to create a 0.5 to a 1% solution. (The 1% solution is for heavy pest infestations.) Upper and lower leaves are sprayed to the point of saturation. It is applied on a 7- to 14-day schedule as necessary.

Timing: Applications should begin at first sign of insect pressure or plant-feeding mite infestation.

Use Practice Limitations: QRD 400 is not to be applied more than 10 times per year. QRD 400 is not to be used on flowering Cyclamen, Gerbera, Begonia, and Impatiens because it can cause phytotoxicity in those plants.

C. ESTIMATED USAGE

None available.

D. DATA REQUIREMENTS

The Agency reviewed data requirements for granting this registration under Section 3(c)(5) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The product analysis and manufacturing process data requirements are satisfied by data submitted by the registrant for the technical grade active ingredient and the end product (see Table 1). Physical and Chemical Properties for the manufacturing use product are satisfied by the data submitted as listed in Table 2. The mammalian toxicology requirements for the TGAI were satisfied by data submitted for acute toxicity (see Table 3). Ecological effects data requirements for ECANA were fulfilled by data and a waiver request for Avian Dietary submitted in support of QRD 406 (see Table 4). The Agency reviewed all of the data and waiver requests and determined that they satisfy current data requirements. The Agency issued a product registration for QRD 406 and QRD 400, EPA Registration Number 69592-21 and EPA Registration Number 69592-22 respectively, on April 20, 2008. In granting these product registrations, the Agency does not foresee any unreasonable adverse effects to humans and the environment from any of the uses of ECANA when used as directed by the product labeling.

E. REGULATORY HISTORY

On February 25, 2005, the Agency received an application filed by Codena, Inc., Saint-Charles-sur-Richelieu, Quebec, Canada, JOH 2GO (submitted by Landis International, Inc., P.O. Box 5126, Valdosta, GA 31603-5126) to register a manufacturing use product containing 100% of the new biochemical pesticide active ingredient, Extract of Chenopodium *ambrosioides* near *ambrosioides* (PC Code 599995, EPA Reg.# 81978-R) and two related end use products (EPA Reg.# 81978-E and EPA Reg.# 81978-G). A notice of receipt for these applications was published in the Federal Register May 18, 2005 (Volume 70, Number 95). Codena, Inc. was purchased by AgraQuest, Inc. (1520 Drew Ave., Davis, CA, 95618) on January 9, 2006; EPA Registration Numbers were subsequently transferred to reflect the new Company Number 69592.

The manufacturing use product containing 100% Extract of Chenopodium *ambrosioides* near *ambrosioides* was assigned EPA Reg. # 69592-ER. In the course of registration one of the end use products was withdrawn. The remaining use product containing 25% of the active ingredient was assigned EPA Reg.# 69592-EE

F. CLASSIFICATION

On November 3, 2004, the Biochemical Classification Committee determined that the Extract of Chenopodium *ambrosioides* near *ambrosioides* can be classified as a biochemical pesticide due to its apparent non-toxic mode of action. The extract works through a physical mode of action by softening the cuticles of some insects, resulting in a disruption of respiration.

G. FOOD CLEARANCES/TOLERANCES

This end product registration is for non-food use; thus no food clearances or tolerances are required due to the non-food use patterns associated with its current registered uses.

III. Science Assessment

A. PHYSICAL/CHEMICAL PROPERTIES ASSESSMENT

All product chemistry data requirements for registration of the manufacturing use product QRD 406 and the end use product QRD 400 have been satisfied.

1. Product Identity and Mode of Action

a. Product Identity

Agraquest, Inc submitted product and physical chemistry data to support the Section 3 non-food registration of QRD 406 (100% ECANA). QRD 406 is a blended extract product comprised of numerous constituent compounds. Three primary constituent compounds, considered to be components of toxicological significance, have been identified as product markers. The balance of the constituents, present in small percentages and not commonly known to have toxic properties, are considered as impurities. The product is produced via a distillation process, and the impurities in the product are inherent in the active ingredient. Acceptable results from a five-batch preliminary analysis were submitted. The registrant proposed certified limits for the constituent markers in the TGAI that were outside OPPTS recommended ranges. The Agency accepted the proposed limits on the basis of information submitted, which indicates negligible risk. The enforcement analytical method to determine the content of the marker components is gas chromatography with flame ionization detection.

b. Mode of Action

ECANA softens the cuticles in many soft bodied insects, resulting in a disruption of respiration.

2. Physical and Chemical Properties Assessment

The physical and chemical characteristics of both the TGAI (the MP) and the end use product QRD 400 were submitted to support the registration. The product chemistry requirements for the extract are summarized in Table 1. The physical and chemical properties of the extract are summarized in Table 2.

TABLE 1. Product Chemistry for QRD 406

Guideline Reference No. /Property	QRD 406	Citation
830.1550 Product Identity	Active Ingredient - 100.0% by weight QRD 406 (extract of Chenopodium *ambrosioides* var. *ambrosioides*). Impurities identified. **ACCEPTABLE**	*MRID 46396201 47209701 47209702*
830.1620 Manufacturing Process	QRD 406 is manufactured by a distillation process. **ACCEPTABLE**	*MRID 46396201 47209701 47209702*

830.1670 Formation of Unintentional Ingredients	Impurities present in the product have been described quantitatively. Ascaridole has been eliminated in the product. **ACCEPTABLE**	*MRID 46396201 47209701 47209702*
830.1700 Analysis of Samples	The three main constituents of the active ingredient are analyzed. A number of individual samples are outside proposed certified limits. **ACCEPTABLE, with Considerations**	*MRID 46396202*
830.1750 Certification of Limits	Considering the variability of plant extracts, the certified limits are **ACCEPTABLE**	*MRID 46396202 47209701 47209702*
830.1800 Analytical Methods	The enforcement analytical method is GC-MS for the three central constituents of the active ingredient. Samples are diluted into acetonitrile, analyzed, and quantified against known standards on a Varian 3900 GC system with a Saturn 2100T ion trap mass selective detector. **ACCEPTABLE**	*MRID 46396202 47209701 47209702*

TABLE 2. Physical and Chemical Properties for QRD-406 (*MRIDs 46396204-46396206, 46858802, 47209701, 47209702*)

Guideline Reference No. /Property		**QRD 406**
830.6302	Color	Pale amber, light brown. Color code 136. Color composition is red=252, green=191, blue=73.
830.6303	Physical State	Semi-volatile liquid
830.6304	Odor	Fruity, woodsy, aromatic, characteristic of monoterpene blend.
830.6313	Stability	Stability during 14-day exposure to iron chips, aluminum wire pieces, iron citrate, or aluminum acetate @ room temperature or 54°C
830.6314	Oxidation/Reduction: Chemical Incompatibility	Does not contain oxidizers or reducing agents
830.6315	Flammability	Flash point = 118°F
830.6316	Explodability	Non-explosive
830.6317	**Storage Stability**	To be submitted by 3/20/09
830.6319	Miscibility	Not applicable, not intended to be diluted with oil or non-polar solvents
830.6320	**Corrosion Characteristics**	To be submitted by 3/20/09
830.6321	Dielectric Breakdown Voltage	Not required for MP or TGAI
830.7000	pH	5.30-5.68, mean of 5.46±0.20 (1% dispersion in deionized water)
830.7050	UV/Visible	Not applicable
830.7100	Viscosity	1.79 mPa.s. (Std Dev = 0.16)
830.7200	Melting Range	Not applicable
830.7220	Boiling Range	170-188°C
830.7300	Bulk Density	0.875 - 0.914, mean of 0.895±0.020 g/mL
830.7370	Dissociation Constant in Water	Not applicable

830.7520	Particle Size/Distribution	Not applicable
830.7550	Partition Coefficient	Marker# 1 = 5.09 Marker# 2 = 5.08 Marker# 3 = 4.85
830.7840	Water Solubility	Marker# 1 = 390-511 mg/L, mean of 436±54 mg/L Marker# 2 = 138-188 mg/L, mean of 160±21 mg/L Marker# 3 = 145-212 mg/L, mean of 183±25 mg/L
830.7950	Vapor Pressure	2613 Pa (0.38 psig) @ 20°C 3157 Pa (0.46 psig)@ 25°C

B. HUMAN HEALTH ASSESSMENT

The mammalian toxicity studies submitted to support the registration application for the ECANA (the TGAI) satisfy the requirements for the registration of a new biochemical pesticide intended for a non-food use pattern. The Agency has determined that the proposed use of this pesticide on field and container-grown ornamentals, trees, Christmas trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, and tropical plants not destined for human or animal consumption qualifies as a non-food use.

1. Toxicology Assessment

Adequate mammalian toxicology data are available to support registration of non-food products containing the new active ingredient Extract of Chenopodium *ambrosioides* near *ambrosioides*. No additional toxicological data are needed at the current time.

a. Acute Toxicity

Acute toxicity studies are summarized in Table 3 below. The TGAI product is categorized as Toxicity Category III for acute oral and primary eye. Acute dermal, acute inhalation and primary dermal are categorized as Toxicity Category IV. ECANA is classified as a dermal sensitizer. Based on the review and analysis of the information, guideline studies and submitted literature no additional toxicity data are required to support the non-food uses of this biochemical pesticide.

TABLE 3. Toxicology Data for QRD 406

Guideline Reference No. /Property	Description of Result	Methods
870.1100 Acute Oral Toxicity	Oral LD50 between 2000 and 5000mg/kg, Toxicity Category III; **ACCEPTABLE**	*MRID 46396207*
870.1200 Acute Dermal Toxicity	Dermal LD50>5000mg/kg, Toxicity Category IV; **ACCEPTABLE**	*MRID 46396208*
870.1300 Acute Inhalation Toxicity	Inhalation LC50>2.03mg/L, Toxicity Category IV; **ACCEPTABLE**	*MRID 46396209*
870.2400 Primary Eye Irritation	No corneal opacity or iritis noted. Conjunctival irritation resolving by day 4, Toxicity Category III; **ACCEPTABLE**	*MRID 46396210*
870.2500 Primary Dermal Irritation	Very slight erythema persisting through day 14. Very slight edema clearing by day 7, Toxicity Category IV; **ACCEPTABLE**	*MRID 46396211*
870.2600 Hypersensitivity	Sensitizer; **ACCEPTABLE**	*MRID 46396212*
Hypersensitivity Incidents	Incidents must be reported	Incidents must be reported
870.5000 Genotoxicity	Not mutagenic to bacterial strains TA98, TA100, TA1535, TA1537 and E coli strain WP2 *uvrA* W, **ACCEPTABLE** No chromosome aberrations in human lymphocytes,	*MRID 46456301*

	ACCEPTABLE No induction of DNA repair response in rat hepatocytes, **ACCEPTABLE**	*MRID 46396214* *MRID 46396215*
880.3550 Immune Response	**ACCEPTABLE limited exposure waiver rationale**	*MRID 47209703*
870.3100 90-day Feeding (1 spp)	**ACCEPTABLE limited exposure waiver rationale**	*MRID 47209703*
870.3250 90-day Dermal (1 spp)	**ACCEPTABLE limited exposure waiver rationale**	*MRID 47209703*
870.3465 90-day Inhalation (1 spp)	**ACCEPTABLE limited exposure waiver rationale**	*MRID 47209703*
870.3700 Prenatal Development (1 spp)	**ACCEPTABLE limited exposure waiver rationale; also Toxicity endpoint based on Marker study in rats:** **Maternal NOAEL=60 mg/kg-day** LOAEL=125 mg/kg-day; based on decreased whole body weight and body weight minus uterine weights during pregnancy **Developmental NOAEL=30 mg/kg-day** LOAEL=60 mg/kg-day based on abnormal ossification, increases in skeletal abnormalities and kidney weights	*MRID 47209703*

b. Mutagenicity and Developmental Toxicity

Genotoxicity studies (OPPTS 870.7500) on QRD 406 showed ECANA to be non-mutagenic and to pose no significant hazard with regard to genotoxicity. (MRIDs 46456301, 46396214, and 46396215) Data showed an inability of ECANA to induce bacterial mutagenesis, to create chromosomal aberrations in human lymphocytes, or to trigger a DNA repair response in rats.

Published literature on developmental toxicity (OPPTS 870.3700) was provided for all the marker constituents in the extract. Maternal and fetal toxicity endpoints for all the constituents were calculated for each constituent based on multiple studies using rats and rabbits. A maternal NOAEL of 60 mg/kg-day and a developmental NOAEL of 30 mg/kg-day were derived from the marker of the most toxicological significance, and represent the most conservative developmental toxicity endpoints for ECANA. Cited literature also illustrated common exposure to each of the major marker constituents without observed teratogenic effect. Common exposures without observed effect included: 1) common consumption of the marker constituents in our fruits and vegetables; 2) regular dermal exposure to the marker constituents through the use of many cosmetics and generalized contact with plants; and 3) the natural presence of the marker constituents in much of the air that we breathe, particularly in spaces rich in vegetation.

c. Subchronic Toxicity and Immunotoxicity

The Agency accepted wavier rationales for the following data requirements: 90-Day Feeding Study (OPPTS 870.3100); 90-Day Dermal Study (OPPTS 870.3250); 90-Day Inhalation Study (OPPTS 870.3465); and Immune Response (OPPTS 880.3550).

The waiver for a 90-day feeding study was accepted because no repeated or subchronic exposures were expected, given the use patterns for this product. The following points were also considered: 1) Repeated human exposure by the oral route is not anticipated for ECANA end-use products. 2) Opportunity for exposure is small, given the limited number of applications and the commercial nature of the use sites. 3) A residue decline study (MRID 47209101) showed that when the end use product containing 25% ECANA (QRD 400) was applied at 4X the label rate, the marker components of the active ingredient were not detectable 10 minutes after application to primrose leaves. This short lifespan limits potential hand-to-mouth exposure from foliage after application. The restricted entry interval of 4 hours after application extends that margin of safety. 4) A study where QRD 400 was applied four times at 2X the label rate on tomatoes (MRID 46858903) found that the residues of marker components were below the limit of quantitation (0.01 mg/kg) at 0 to 24 hrs post-treatment. 5) In acute studies using rats, the oral LD_{50} for QRD 400 was >5000 mg/kg.

The waiver for a 90-day dermal study was accepted because no repeated or subchronic exposures were expected, given the use patterns for this product. The following points were also considered: 1) Exposures are limited for the reasons referred to in the rationale for the 90-day feeding study - limited use patterns, PPE, and data showing rapid degradation. 2) The occupational exposure and risk assessment for the end use product containing 25% ECANA had margins of exposure, which obviated significant risks. 3) The dermal LD_{50} for QRD 400 was >5000 mg/kg.

The waiver rationale for a 90-day inhalation toxicity study (OPPTS 870.3465) was accepted because no repeated or subchronic exposures were expected, given the use patterns for this product. The following points were also considered: 1) Exposures are limited for the reasons referred to in the 90-day feeding study rationale referred to above - limited use, PPE requirements and degradation. 2) In an acute study using rats, the inhalation LC_{50} for QRD 400 was >2.0 mg/L.

The waiver request for immune response (OPPTS 880.3550) was also based on the determination that no repeat exposures were expected. Other following information was also considered: 1) The registrant could find no published literature to suggest that the active ingredient, or its main marker components, impact the immune system in humans or produce any immunosuppressive effects. 2) Published literature indicates exposure to the marker constituents of the active ingredient occurs from both natural and artificial sources, and is common. It is reasonable to conclude that the general population is exposed through ingestion of food products and by dermal contact with plants that contain these components. Exposure also occurs via inhalation of these components from natural emissions from plants. 3) The marker ingredients have all been approved by FDA

for use as food additives, albeit in limited fashion. 4) There is virtually no opportunity for residual exposures. A residue decline study (MRID 47209101) showed that when the end use product containing 25% ECANA was applied at 4X the label rate, the marker components of the active ingredient were not detectable 10 minutes after application to primrose leaves.

d. Chronic Exposure and Oncogenicity Assessment

Extended duration repeated dose studies are conditionally required if the potential for adverse chronic effects are indicated based on: 1) the subchronic effect levels established in Tier I subchronic oral, inhalation, or dermal studies, 2) the pesticide use pattern, or 3) the frequency and the level of repeated human exposure that is expected. In the case of chronic exposure, the targeted use pattern, infrequency of application and the lack of repeated exposure do not warrant further studies. Oncogenicity studies are required only if the active ingredient or any of its metabolites, degradation products, or impurities produced in Tier I studies any morphologic effects in any organ that potentially could lead to neoplastic changes. None of the results of the submitted studies triggered the need for oncogenicity testing.

e. Effects on the Endocrine System

The Agency is required under the Federal Food, Drug, and Cosmetics Act (FFDCA), as amended by Food Quality Protection Act, to develop a screening program to determine whether certain substances (including all pesticide active and other ingredients) "may have an effect in humans that is similar to an effect produced by a naturally-occurring estrogen, or other such endocrine effects as the Administrator may designate." Following the recommendations of its Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), EPA determined that there was scientific basis for including, as part of the program, the androgen- and thyroid-hormone systems, in addition to the estrogen hormone system. EPA also adopted EDSTAC's recommendation that the Program include evaluations of potential effects in wildlife. For pesticide chemicals, the Agency will use FIFRA and, to the extent that effects in wildlife may help determine whether a substance may have an effect in humans, FFDCA authority to require the wildlife evaluations. As the science develops and resources allow, screening of additional hormone systems may be added to the Endocrine Disruptor Screening Program (EDSP).

Based on the weight of the evidence of available data, no endocrine system-related effects have been identified for ECANA and none are expected. Available data further suggest that the active ingredient does not share any structural similarity to any known endocrine disruptor.

2. Dose Response Assessment

A developmental toxicity study of ECANA established developmental toxicity endpoints of 0.60 mg/kg-day for maternal exposures and 0.30 mg/kg-day for developmental exposures (DEEM-FCID™ analyses). The endpoints were derived using data on the constituent marker of the most toxicological significance, and are considered conservative. The Lowest Observed Adverse

Effect Level (LOAEL) for maternal exposures was 125 mg/kg-day, and 60 mg/kg-day for developmental exposure based on abnormal ossification, increases in skeletal abnormalities and kidney weights.

3. Dietary Exposure and Risk Characterization

No food crops are treated with this pesticide so there is little opportunity for direct dietary exposure. A dietary risk analysis found no significant risk from this potential route of exposure. It is also noted that the character of the pesticide further precludes the potential for incidental dietary exposure. Supplementary residue studies, one on tomatoes (MRID 46858903) and one on primrose plants (MRID 46858903), submitted in support of the active ingredient ECANA show that the product degrades quickly, further reducing the chance for incidental exposure.

Additionally, no significant exposure or risk is expected from an accumulation of ECANA in the aquatic environment when following the directions on the label. The dietary risks to all subpopulations resulting from acute dietary exposure to water residues of ECANA were below EPA's level of concern. Low application rates and rapid biodegradation further reduce potential exposure.

An acute dietary exposure analysis for ECANA quantitatively demonstrates minimal risk associated with exposure to the pesticide. That analysis also calculated possible exposure through drinking water containing theoretical residues of ECANA. Using the most conservative values, EPA found a maximum dietary exposure of 0.006052 mg/kg-day for the general population. Dietary exposure and risk for ECANA for all subpopulations were below EPA's level of concern (<100% aPAD). Detailed references which discuss the acute risk assessments are available on the EPA/pesticides web site: "Available Information on Assessing Exposure from Pesticides, A User's Guide," 6/21/2000, web link: http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf ; or see SOP 99.6 (8/20/99)

4. Occupational, Residential, School and Day Care Exposure and Risk Characterization

a. Occupational Exposure and Risk Characterization

Occupational exposure and risk from the outdoor and greenhouse application of ECANA to plants (via airblast, groundboom, high and low pressure handwand, backpack sprayer, and hose end sprayer application methods) was determined using values derived from the Pesticide Handlers Exposure Database, indoor air exposure estimates from the Multi-Chamber Concentration and Exposure Model, and toxicological endpoints derived from data on the constituents. Assessments were made for mixers/loaders/applicators dressed primarily in long-sleeved shirt and long pants, chemical resistant gloves, and socks plus shoes. Additional PPE such as a NIOSH-approved respirator with an organic vapor cartridge or canister with any R, P, or HE filter, chemical resistant headgear, and coveralls were added for certain application methods to reduce exposure.

The risks from exposure to ECANA were calculated for multiple occupational scenarios. In mixer/loader scenarios all scenarios were below EPA's threshold of concern (Margin of Exposure > 100; MOE) when using label instructed PPE in outdoor and greenhouse applications. In mixer/loader/applicator scenarios, all scenarios but one (high pressure handwand with female applcators) were also below EPA's threshold of concern when using label instructed PPE in outdoor and greenhouse applications. In the high pressure handwand scenario with female applicators, dermal and total MOEs were slightly above EPA's threshold of concern (87 and 79, respectively), but risks were expected to not be of concern when factoring in the marginal dermal absorption of the marker components. In this case, the modeling assumed 100% dermal absorption, which is extremely unlikely for these constituent components. If the exposures are modified to account for more likely absorption rates, the quantitative estimates would be above an MOE of 100, our threshold of concern. A review of chemical analogs to ECANA's markers show a range of dermal absorption from 10% (semi-volatile organic compounds), to 35% (toluene), to 61% (thymol). Factoring in these dermal absorptions results in dermal and total MOEs of 873, 788; 249, 225; and 143, 129, respectively. Any dermal absorption less than 80% would result in MOEs below EPA's threshold of concern.

b. Residential, School and Day Care Exposure and Risk Characterization

ECANA is intended for commercial greenhouse and nursery use only. As such, minimal spray drift is expected to contact residential, school or daycare property. Furthermore, any extract that did drift onto these properties would degrade rapidly. Although accidental non-dietary exposure may occur, the health risk is expected to be minimal due to the low concentration of extract in the end use product, lack of oral and dermal toxicity, minimal acute inhalation toxicity, and minimum potential for eye and dermal irritation. Significant human exposure to ECANA is highly unlikely in residential, school and day care areas.

5. Drinking Water Exposure and Risk Characterization

A dietary exposure analysis confirms that no significant exposure or risk is expected from an accumulation of ECANA in the aquatic environment when following the directions on the label. The dietary risks to all subpopulations resulting from acute dietary exposure to water residues of ECANA were below EPA's level of concern. Low application rates (1.8568 pounds a.i./acre, applied no more than ten times a year) and rapid biodegradation (a soil aerobic half life of 7.36 minutes and an aqueous half life of 36.11 hours) further reduce potential exposure.

6. Acute and Chronic Dietary Risks for Sensitive Subpopulations Particularly Infants and Children

Based on all the available information, the Agency has concluded that there is reasonable certainty that no harm to infants and children or adults will result from the use of ECANA as registered. The active ingredient is intended for non-food use in commercial nurseries and greenhouses only; dietary exposure is expected to be negligible. For this assessment, the FQPA

Safety Factor was designated as 1X because of the adequacy of data from; 1) seven Developmental Toxicity studies and 2) two foliar residue studies demonstrating rapid degradation following application. The 10X uncertainty factor for interspecies extrapolation and 10X uncertainty factor for intraspecies extrapolation have been retained and used to generate acute PADs for the maternal and developmental NOAELs. These developmental toxicity endpoints have been modified to 0.60 mg/kg-day and 0.30 mg/kg-day, respectively. Acute dietary exposure for the U.S. population and various sensitive subpopulations were estimated in DEEM-FCID™ analyses. These analyses determined which subpopulations were at acceptable risk levels (≤100% of acute, aPAD) when using the lowest, most conservative, no-adverse effect level (General U.S. Population - 0.60 mg/kg-day, other subpopulations - 0.30 mg/kg-day).

7. Aggregate Exposure from Multiple Routes Including Dermal, Oral, and Inhalation

There is reasonable certainty that no harm to the US population will result from aggregate exposure to residues of ECANA. The Agency notes the low level of toxicity and the already widespread exposure to Chenopodium *ambrosioides* near *ambrosioide* without any reported adverse effects on human health. Dietary estimates of exposure (0.0228 to 0.0094 mg/kg-day) are also very conservative and not expected to contribute significantly to dermal, inhalation, and secondary inhalation exposures through volatilization exposures.

8. Cumulative Effects

The major constituents of ECANA show no indication that the toxic effects associated with the exposure to these components are cumulative. Section 408(b)(2)(D)(v) of the FFDCA requires that, when considering whether to establish, modify, or revoke a tolerance, EPA consider available information concerning the cumulative effects of a particular pesticide's residues and other substances that have a common mechanism of toxicity. EPA does not have, at this time, available data to determine whether the major constituents of the extract have a common mechanism of toxicity with other substances. As a result, EPA has not made a common mechanism of toxicity finding regarding the constituents of ECANA.

For information regarding EPA's efforts to determine which chemicals have a common mechanism of toxicity and to evaluate the cumulative effects of such chemicals, see the policy statements released by EPA's Office of Pesticide Programs concerning common mechanism determinations and procedures for cumulating effects from substances found to have a common mechanism on EPA's website at http://www.epa.gov/pesticides/cumulative/.

9. Risk Characterization

The Agency considered human exposure to ECANA in light of the relevant safety factors in FQPA and FIFRA. A determination has been made that no unreasonable adverse effects to the U.S. population in general, and to infants and children in particular, will result from the use of ECANA when label instructions are followed.

C. ENVIRONMENTAL ASSESSMENT

All nontarget organism, fate and expression data requirements for Extract of Chenopodium *ambrosioides* near *ambrosioides* have been acceptably satisfied and are summarized below in Table 4.

1. Ecological Effects Hazard Assessment

The avian acute oral study (OPPTS 885.4050) and non-target insects study (OPPTS 850.4350) show practically no toxicity to birds or nontarget insects. A waiver granted for the avian dietary study (OPPTS 850.2200) makes clear the low probability of dietary exposure for birds altogether. The freshwater fish study (OPPTS 850.1075) demonstrated moderate toxicity to fish; and an aquatic invertebrate study (OPPTS 850.1010) showed high toxicity to daphnids. Limited use patterns and restrictive labeling language will preclude significant risk. A waiver was granted for nontarget plants (OPPTS 850.4350) primarily on the grounds that the applications of ECANA are directed, and are non-toxic to most plant species (MRID 47209703).

An acute avian toxicity study (MRID 47209704) supports the non-food registration of ECANA. The oral gavage study on 10 Northern Bobwhite Quail established an acute oral LD_{50} and oral LD_0 of > 2250 mg/kg and 2000 mg/kg, respectively. There was no mortality in the test group. A waiver was granted for avian dietary toxicity (MRID 47209703) based on the determination that: 1) acute oral toxicity is low; 2) avian dietary exposure is unlikely to be of concern because the use of the pesticide is restricted to commercial nurseries, greenhouses, lath houses, and shade houses; 3) the residues dissipate quickly following application. Data show ECANA is practically non-toxic to birds; and the opportunity for avian exposure is small.

A 48-hour static renewal acute invertebrate toxicity test with freshwater daphnids (MRID 47209705) using ECANA satisfies the nontarget aquatic invertebrate requirement. Applied to the nominal concentration's 24 and 48 hour EC_{50} (3.3 and 1.3 mg/L), resulted in estimated toxicity endpoints of 0.594 and 0.234 mg/L. The pesticide has been classified as highly toxic to aquatic invertebrates. Nonetheless, the pesticide is thought to pose minimal risk on the basis of the lack of aquatic exposure. Limited use patterns and labeling to mitigate runoff and spray drift provide further protections.

A 96-hour static renewal acute fish toxicity test (MRID 47209706) satisfied the data requirement and resulted in a categorization of moderately toxic to fish. Fathead minnows (*Pimephales promelas*) were exposed to test solutions containing nominal concentrations of 1.9, 3.8, 7.5, 15, and 30 mg/L ECANA. Percent mortality in the 3.8, 7.5, 15, and 30 mg/L groups was 0, 0, 5, and 100%, respectively. Fish in the 3.8 and 7.5 mg/L test material groups exhibited surfacing and loss of equilibrium. Applied to the nominal concentration 96 hour LC_{50} (20 mg/L), the no-mortality concentration (7.5 mg/L), and the NOEC (1.9 mg/L) resulted in estimated toxicity endpoints of 2.2 (with a 95% confidence interval of 1.65 to 3.3 mg/L), 0.825, and 0.209 mg/L, respectively.

Once more, aquatic exposure is expected to be negligible, and application of the pesticide is not expected to pose significant risks.

The waiver rationale for nontarget insect toxicity (MRID 47209703) satisfies the data requirement. ECANA is not expected to pose any significant hazards for nontarget insects for the following reasons: 1) Outdoor exposures for ECANA are limited, and many of the plants to be sprayed are ornamentals that are generally not prime habitat or food sources for nontarget insects. 2) Data have shown the pesticide to be compatible with several insects used as biological controls. 3) Residue decline data showed that the marker components of the active ingredient were not detectable 10 minutes after application to primrose leaves. This limits the window of opportunity for nontarget insect exposure. 4) Multiple published articles speak to a directed toxicity for target pests, and a practical non-toxicity for non-specific species. References include: "Insecticidal Properties of a Chenopodium-Based Botanical"; Chiasson, Vincent, and Bostanian; "Effects of a Chenopodium-based botanical insecticide/acaricide on *Orius insidiosus* (Hemiptera: Anthocoridae) and *Aphidius colemani* (Hymenoptera: Braconidae)" by Bostanian, Alalach, and Chiasson); "The Effect of FACIN 25EC on Adult Worker Bumblebees in the Laboratory" by Chiasson. Taken altogether, ECANA is not expected to pose any significant risk to nontarget insects.

The waiver rationale for nontarget plant toxicity (MRID 47209703) satisfies the data requirement. ECANA is not expected to pose any significant hazards for nontarget plants. The intended use sites are limited and applications of ECANA are targeted. Four unpublished plant toxicity studies, characterizing the effects of ECANA, have been submitted by the registrant confirming a general non-toxicity to nontarget plants, and the lack of generalized phytotoxic effects on plants. (Report# 70100 per MRID 47209703; Lab Project No: Ludwig-60488; "Evaluation of FACIN 25EC for Crop Safety with Various Ornamental Plants Grown in Commercial Greenhouses"; Laboroatory Project Number 2006-Rose-Gerbera-PX-14; "Evaluation of FACIN 25EC on Crop Safety with Roses and Gerbera in a Commercial Greenhouse"; Laboratory Project Number 0420; "Evaluation of FACIN 25EC on crop safety with various ornamental greenhouse plants"). Some species-specific phytotoxicity has been observed on flowers of Cyclamen, Gerbera, Begonia, and Impatiens; however, data indicate these effects are not generalized. Moreover, these particular uses are prohibited on the label. In sum, ECANA is not expected to pose any significant risk to nontarget plants.

Table 4. Non-target Toxicity of QRD 406 or its Marker Components

Study Type/OPPTS Guideline	LD_{50}/LC_{50}/Results	Toxicity Category	MRID
Avian Acute Oral *Colinus virginianus* (OPPTS 885.4050)	Acute oral LD_{50} for northern bobwhites >2250 mg/kg. **ACCEPTABLE**.	Practically Non-toxic	47209704
Avian Dietary (OPPTS 850.2200)	Waiver rationale based on low probability of exposure, low acute avian toxicity. **ACCEPTABLE**.	N/A	47209703

Freshwater Fish LC_{50} *Pimephales promelas* (OPPTS 850.1075)	96 hr Nominal conc; 20 mg/L 96 hr Modified for aqueous degradation; 2.2 mg/L (C.I. 1.65-3.3) **ACCEPTABLE**.	Moderately Toxic	47209706
Freshwater Invertebrate *Daphnia magna* (OPPTS 850.1010)	24, 48 hr Nominal conc; 3.3, 1.3 mg/L 24, 48 hr Modified for aqueous degradation; 0.594, 0.234 mg/L (C.I. 0.414-0.864 and 0.164-0.306). **ACCEPTABLE**.	Highly Toxic	47209705
Non-target Plants (OPPTS 850.4100)	Salvia, Cosmos, Sweet Allysum NOEC 1%, LOEC based on increased height at 2% and 4%. Begonia NOEC, not determined; LOEC 2% based on foliar burn and flower discoloration at 14-21 days. Vinca (strong varietal response) NOEC, not determined; LOEC 2% based on dose-dependent increase in foliar black spots. Impatiens, Petunias NOEC, not determined; LOEC 2% based on dose-dependent decrease in the number of flowers and open flowers at 21 days Marigold, Tomato, Zinnias NOEC 2% Fury, Ingrid, Grandina Gerbera NOEC, not determined; LOEC 2% based on increase in mature flower necrosis at 7 days, 4% based on increase in bud necrosis at 7 days Jack Frost, Sabrina, Sonia Rose NOEC, not determined; LOEC 4% based on various endpoints such as increased film, increased necrosis on new and old growth foliage by 7 days, increased necrosis on mature flowers and flower buds by 7 days. **ACCEPTABLE**.	N/A	47209703
Non-target Insects *Orius insidiosus* *Aphidius colemani* *Bombus impatiens* (OPPTS 850.4350)	*Orius insidiosus*; 48 h; contact toxicity; nymph 29.15 g/L (C.I. 23.33-36.14), adult 11.28 g/L (C.I. 7.32-15.31) *Aphidius colemani*; 48 h; contact toxicity; females 13.23 g/L (C.I. 7.50-18.90), males 7.70 g/L (C.I. 1.57-16.57) *Bombus impatiens*; 7, 14 day; contact toxicity; 0.1458 mg/cm^2 (C.I. 0.1180-0.2043), 0.0771 mg/cm^2 (C.I. 0.0475-0.1723) *Bombus impatiens*; 7, 14 day; contact toxicity; 0.1076 mg/bee, 0.0569 mg/bee; 7, 14 day LC_{50} (95% C.I.); 15.4% (7.68-101.19), 8.75% (5.69-17.67) **ACCEPTABLE**. Green peach aphid; 24 h; 0.63% (C.I. 0.47-0.79%) Western flower thrip; 24 h; 0.0034 mg/cm^2 (C.I. 0.0027-0.0039 mg/cm^2) Greenhouse whitefly; 24 h; 0.0066 mg/cm^2 (C.I. 0.0054-0.0076 mg/cm^2) **ACCEPTABLE**.	III Practically Non-toxic	47209703

2. Environmental Fate and Ground Water Data

Environmental fate and groundwater data for ECANA were sufficient for registration. Physical chemistry data extracted from MRIDs 46396204-46396206, 46858802, 47209701, 47209702 and data extracted from a nontarget fish study (47209706) and an aquatic invertebrate study (MRID 47209707) were used in EPA modeling to help quantify the environmental risks. The Agency estimated aquatic residues using the screening model GENeric Estimated Exposure Concentration - GENEEC v2.0. Based on the estimated environmental concentrations (EECs) from the GENEEC model (Table 5) and results from aquatic studies risk quotients (RQs) were derived to evaluate the potential risk to aquatic animals (Table 5). The calculated RQs were below the EPA levels of concern (LOC) for fish and aquatic invertebrates (including endangered species) chronically exposed to a pesticide when applied in accordance with the label directions.

The GENEEC model uses environmental parameters that are typical for a "standard agricultural field-farm pond" to estimate aqueous residues. The field-pond scenario emulates a 1 hectare, 20,000,000 liter, 2 meter deep pond that receives rainfall drainage from a 10 hectare agricultural field. The primary assumption with GENEEC is that the fields receive one single large rainfall event (either immediately after application or after a latent period of 2 days) that washes a certain quantity of pesticides from the fields and into the pond. Degradation and adsorptive processes modify the initial mass of pesticides in both environments. Unlike with foliar residues, the constituent markers of ECANA are not degraded or volatilized quickly in water. (The EPA-estimated aqueous half-lives for all the constituent markers from a variety of residue measurements taken during the aquatic daphnid study (MRID 47209707), fish toxicity study (MRID 47209706), and aqueous stability study (MRID 47209707) ranged from 35.87 hours to 866.67 hours.)

Aqueous ECANA residue concentrations were estimated by GENEEC for a wide variety of scenarios using aerial, groundboom and airblast applications. Applications were either "watered in" with a rain event shortly following application or allowed to dry for 2 days prior to a rain event. Rain events immediately following application increased residue concentrations in the farm pond to levels such that Daphnid RQs exceeded the LOCs for every application method. Fish remained below the LOCs for normal and threatened and endangered species, suggesting low relative risk to fish. Daphnid RQs from groundboom and airblast to vineyards applications were also below the LOCs for normal and threatened and endangered species when residues were allowed to dry for 2 days. As with fish RQs, this suggested that there was low relative risk to aquatic invertebrates from these application methods. The only aerial application to have Daphnid RQs less than the LOCs was one in which the spray dried for 2 days and the application had a 370 foot buffer. Similar traits were observed for airblast operations to orchards when using a 14 foot buffer.

Table 5. Aqueous Concentrations of QRD 400 Modeled from GENEEC Following Various Outdoor Application Methods

Application Method	Spray Buffer (ft)	Wet In from Rain Event	Peak EEC Concentration (µg/L)	[1] Daphnid RQ	[2] Fish RQ	Max 4 Day Average (µg/L)	Max 21 Day Average (µg/L)	Max 60 Day Average (µg/L)	Max 90 Day Average (µg/L)
Airblast - orchards	100 (14)	No	3.92	0.02 (0.05)	<0.01	3.69	2.09	0.88	0.59
Airblast - vineyards	None	No	2.67	0.01	<0.01	2.52	1.42	0.60	0.40
Airblast - vineyards	100	No	0.382	<0.01	<0.01	0.359	0.204	0.086	0.058
Groundboom - high boom - fine spray	100	No	2.13	0.01	<0.01	2.00	1.13	0.48	0.32
Groundboom - low boom - fine spray	None	No	4.95	0.02	<0.01	4.67	2.64	1.12	0.75
Groundboom - low boom - fine spray	100	No	0.863	<0.01	<0.01	0.813	0.460	0.194	0.130

[1] Daphnid RQs = Peak EEC concentration (mg/L)/0.234 mg/L
[2] Fish RQs = Maximum 4 day Average EEC concentration (mg/L)/2.2 mg/L

LOC exceedences for certain application methods and environmental conditions required that restrictions or limitations be added to the proposed label to reduce the potential for "high acute risk" in aquatic invertebrates. Specifically, aerial, airblast, and groundboom outdoor methods of application (and presumably other more manual methods such as handwand as well) require plant treatment prior to a rain event. Additionally waterbody spray buffers of 14 (groundboom and airblast) and 370 feet (aerial) are required to mitigate potential "high acute risk" to aquatic invertebrates.

3. Ecological Exposure and Risk Characterization

The proposed uses of ECANA and its end use product, QRD 400, are **Not Likely to Adversely Affect** (NLAA) threatened and endangered (T&E) species. The proposed uses are targeted, and T&E exposure scenarios are limited. Applications are specific to field and container-grown non-food ornamentals, trees, Christmas trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, and tropical plants grown in greenhouses, shade and lath houses, and nurseries.

While applications of ECANA in "indoor" greenhouse and shade and lath house use sites preclude exposure to T&E species, some applications in open commercial nurseries may result in exposure to T&E species. However, the following factors are expected to address any concerns in these exposure scenarios: 1) The foliar half-life of the extract is very short following application. 2) Commercial nurseries are suboptimal foraging habitat for most avian, mammalian, and invertebrate species. 3) Commercial nurseries are not typically located adjacent to T&E species

critical habitat. And 4) spray drift is mitigated through labeling provisions for buffer requirements and applications intervals prior to rain events.

D. EFFICACY DATA

No efficacy data were submitted in support of label claims and product performance for applications containing ECANA. While the conduct of product performance studies (Efficacy Trials, OPPTS 810.300) is listed as a requirement for all pesticide products, the Agency customarily only requires these data to be submitted for review in connection with the registration of products directly pertaining to the mitigation of disease bearing human health organisms and certain designated Quarantine Pests, i.e., ticks, mosquitoes, fleas, Mediterranean fruit flies, Gypsy Moths, Japanese Beetles and etc. In this case, the registrant did not have any public health pest claims on their label, and a submission of efficacy data was not requested. Nonetheless, the registrant claims to have such data on file, and is prepared to submit if requested.

The registrant has made claims against plant-feeding mites. While an unqualified claim against mites or a species-specific claim against a public health pest mite would trigger an efficacy submission, the registrant has submitted information showing that plant-feeding mites as a class are fundamentally different than any species of mite listed as a public health pest in Pesticide Registration Notice 2002-1.

IV. Risk Management Decision

A. DETERMINATION OF ELIGIBILITY FOR REGISTRATION

Section 3(c)5) of FIFRA provides for the registration of new active ingredients if it is determined that (A) its composition is such as to warrant the proposed claims for it; (B) its labeling and other materials required to be submitted comply with the requirements of FIFRA; (C) it will perform its intended function without unreasonable adverse effects on the environment; and (D) when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.

To satisfy criteria “A” above, ECANA products are not expected to cause unreasonable adverse effects when used according to label instructions. Criteria “B” is satisfied by the current label and the data presented in this document. The Agency believes that this pesticidal active ingredient will not cause any unreasonable adverse effects, as an insecticide and acaricide, and does provide protection as claimed satisfying Criteria “C.” Criteria “D” was satisfied by the data presented in the initial registration of this biochemical. Therefore, ECANA meets the standard for registration.

B. REGULATORY POSITION

1. Unconditional Registration

All of the data requirements are fulfilled and EPA granted an unconditional registration for the active ingredient, ECANA.

Tolerance Establishment

The uses of ECANA have been determined to be "non-food" uses and therefore do not require the establishment of a food tolerance or an exemption from the requirements of a tolerance.

2. CODEX Harmonization

Not applicable because all of the uses have been determined to be non-food.

3. Nonfood Registrations

There are no issues at this time.

4. Risk Mitigation

There are no significant risk issues identified for dietary risk or ground and surface water contamination. Residential risk is obviated by the lack of residential uses. Mitigation measures for occupational routes of exposure are required in that mixers, loaders and applicators are required to wear appropriate PPE. Indirect exposures via spray drift are also mitigated by label directions restricting spray applications to commercial use sites and by requiring spray buffers. Risk to nontarget organisms will, likewise, be mitigated by labeling that requires spray buffers and directions that account for potential rain events.

5. Endangered Species Statement

The proposed uses of ECANA are 'Not Likely to Adversely Affect' (NLAA) threatened and endangered species. Five primary factors limit the potential for threatened and endangered species to be exposed: 1) Proposed use patterns including greenhouses, commercial nurseries, lath and shade houses precludes spraying near critical habitat for threatened and endangered species. 2) The rapid foliar degradation/volatilization (maximum estimated half-life 7.36 minutes) precludes endangered species from being exposed when moving into commercial nurseries to feed. 3) The proposed use areas, greenhouses, commercial nurseries, lath and shade houses, are suboptimal foraging habitat for most avian and mammalian species, thereby lessening the potential for species to move into these areas following ECANA applications. 4) The proposed buffers around waterbodies will substantially mitigate spray drift into waterbodies, thereby reducing or eliminating exposures to T&E aquatic organisms. 5) The proposed restriction from application prior to rain events will also substantially mitigate the potential for residues to drift or be washed into waterbodies, reducing or eliminating exposures to T&E aquatic organisms.

C. LABELING RATIONALE

The Agency's position is that the labeling for the product containing ECANA as the active ingredient, complies with current pesticide labeling requirements imposed under FIFRA and 40 CFR ' 156.10.

1. Human Health Hazard

a. Worker Protection Standard

Any product whose labeling reasonably permits use in the production of an agricultural plant on any farm, forest, nursery, or greenhouse, must comply with the labeling requirements of Pesticide Registration (PR) Notice 93-7, ''Labeling Revisions Required by the Worker Protection Standard (WPS)," and PR Notice 93-11, "Supplemental Guidance for PR Notice 93-7," which reflect the requirements of EPA's labeling regulations for worker protection statements (40 CFR part 156, subpart K). These labeling revisions are necessary to implement the Worker Protection Standard for Agricultural Pesticides (40 CFR part 170). Unless otherwise specifically directed, all statements required by PR Notices 93-7 and 93-11 are to be on the product label exactly as instructed in those Notices.

The labels and labeling of all products must comply with EPA's current regulations and requirements as specified in 40 CFR 156.10 and other applicable notices, such as, and including the WPS labeling. Uses of the end-use product containing ECANA are subject to the requirements of WPS, and as such it has the appropriate language as required by the standard. For uses of this product that are covered by the Worker Protection Standard (WPS), worker entry into treated areas is not allowed during the restricted entry interval of 4 hours. The PPE requirement for early entry to treated areas that is permitted under the WPS and that involves contact with anything that has been treated, such as plants, soil, or water, is long pants and long sleeved shirt, waterproof gloves, and shoes plus socks.

b. Non-Worker Protection Standard

There are no expected non-WPS (non-mixer/loader/applicator) human health hazard issues. However, there are potential commercial applications that may fall outside of the scope of WPS, for example, the commercial treatment of plants in an ornamental garden. For these reasons, EPA has accepted a Non-WPS box to protect this class of worker against such unmitigated exposures. The Non-WPS box sets the terms for non-WPS early reentry and directs non-WPS users to wear PPE. EPA expects that post-application re-entry exposure and risk will be negligible because foliar residues of ECANA are degraded rapidly.

c. Precautionary Labeling

The Agency has examined the toxicological database for ECANA and has concluded that the precautionary labeling (i.e., Signal Word, First Aid statement, and other label statements) listed on the label (See Appendix A - Product Label) adequately mitigates the risks associated with the currently registered uses.

The following Personal Protective Equipment Language (PPE) and the User Safety Recommendations Box immediately below the Precautionary Statement reads as follows:

PERSONAL PROTECTIVE EQUIPMENT
Applicators mixers, loaders and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks
- Protective eyewear
- Coveralls for high-pressure handwand and groundboom applicators.
- For greenhouse uses, applicators and other handlers must wear a NIOSH-approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE filter.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS
Users should:
● Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
● Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

d. Spray Drift Advisory

The Environmental Hazards statement in the following section is required to contain a drift statement. Aerial applications are expressly prohibited in the Directions for Use of the registered end use product, QRD 400. The Directions for Use of any future end use products containing ECANA must also contain the following directions for mitigating spray drift:

Do not apply this product by aerial application or through any type of irrigation system.

QRD 400 is toxic to aquatic invertebrates. Users must maintain the following buffer zones: Airblast spray applicators must not apply within 15 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds). Groundboom and airblast applicators must also account for wind direction and speed. Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 10 mph. Do not apply when a rain event is expected within 2 hours.

2. Environmental Hazards Labeling

The following language is to appear in this section of the label:

ENVIRONMENTAL HAZARDS
This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply when weather conditions favor drift or runoff from treated areas. Do not apply when a rain event is expected within 2 hours. Air blast applications must maintain a spray buffer of 15 feet from any waterbody. See the Directions for Use for details.

3. Application Rate

Users dilute the end use product (QRD 400) to a 0.5 to 1% solution. (The 1% solution is for heavy pest infestations.) Upper and lower leaves are sprayed to the point of saturation. It is applied on a 7- to 14-day schedule as necessary. QRD 400 applications are limited to no more than 10 times per year.

D. LABELING

Product name: QRD 400

Active Ingredient: Extract of Chenopodium *ambrosioides* near *ambrosioides*

Active Ingredient:

Extract of Chenopodium *ambrosioides* near *ambrosioides*	25.0%
Other Ingredients	75.0%
Total:	100.0%

Signal word is "CAUTION".

Label Language Requirements for End Use Products:

The following labeling language as listed below is required for Federal registration:

- The product description following the product name must explicitly state that the product is for non-food ornamentals; and it must make clear that the product is not for residential use.

"FOR USE ON NON-FOOD ORNAMENTALS (TREES, SHRUBS, AND BEDDING PLANTS) NOT FOR RESIDENTIAL USE"

- The PRECAUTIONARY STATEMENTS must contain the following Hazards to Humans and Domestic Animals statement:

"HAZARD TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wear the appropriate Personal Protective Equipment (PPE)."

- The PRECAUTIONARY STATEMENTS must contain the following Personal Protective Equipment statement:

"PERSONAL PROTECTIVE EQUIPMENT

Applicators mixers, loaders and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks
- Protective eyewear
- Coveralls for high-pressure handwand and groundboom applicators.
- For greenhouse uses, applicators and other handlers must wear a NIOSH-approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE filter.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry."

■ The PRECAUTIONARY STATEMENTS must contain the following Environmental Hazards statement:

"ENVIRONMENTAL HAZARDS
This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply when weather conditions favor drift or runoff from treated areas. Do not apply when a rain event is expected within 2 hours. Air blast applications must maintain a spray buffer of 15 feet from any waterbody. See the Directions for Use for details."

■ The PRECAUTIONARY STATEMENTS must contain the following Physical or Chemical Hazards statement:

"PHYSICAL OR CHEMICAL HAZARDS
Combustible. Do not use or store near heat or open flame."

■ Regarding FIRST AID: The following statement must accompany the First Aid text block: "Have the product container or label with you when calling a poison control center or doctor, or going for treatment." The Agency guidance also suggests including a contact telephone number for additional emergency medical treatment information.

■ The DIRECTIONS FOR USE must contain the following statements:

1. A prohibition against food use and residential use: "QRD 400 is an Emulsifiable Concentrate (EC) Insecticide and Acaricide for Use on Field and Container-grown Non-Food Ornamental Plants in Commercial Nurseries, Greenhouses, and Lath- and Shade-houses. Not For Residential Use."

2. A prohibition on aerial (and chemigation) applications: "Do not apply this product by aerial application or through any type of irrigation system.

3. An aquatic toxicity statement and a requirement for spray buffers: "QRD 400 is toxic to aquatic invertebrates. Users must maintain the following buffer zones: Airblast spray applicators must not apply within 15 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs,

rivers, streams, marshes, ponds, estuaries, and commercial fish ponds). Groundboom and airblast applicators must also account for wind direction and speed. Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 10 mph. Do not apply when a rain event is expected within 2 hours."

4. A limitation on the number of annual applications: "Do not apply QRD 400 more than 10 times per year."

5. A prohibition against the use on the following ornamentals: "Do not use QRD 400 on flowering Cyclamen, Gerbera, Begonia, and Impatiens."

V. Actions Required by Registrants

The Agency evaluated all of the data submitted in connection the initial registration of Extract of Chenopodium *ambrosioides* near *ambrosioides* and determined that these data are sufficient to satisfy current registration guideline requirements. No additional data are required to be submitted to the Agency at this time.

Notwithstanding the information stated in the previous paragraph, it should be clearly understood that certain, specific, data are required to be reported to the Agency as a requirement for maintaining the Federal registration for a pesticide product. A brief summary of these types of data are listed below.

A. REPORTING OF ADVERSE EFFECTS

Reports of all incidents of adverse effects to the environment must be submitted to the Agency under the provisions stated in FIFRA, Section 6(a)(2).

B. REPORTING OF HYPERSENSITIVITY INCIDENTS

Additionally, all incidents of hypersensitivity (including both suspected and confirmed incidents) must be reported to the Agency under the provisions of 40 CFR Part 158.690(c), guideline reference number 152-16.

VI. Appendix A

Table 5 lists the use sites for the product. The label for the product is also attached (see **Appendix C)**.

Table 5. Use Sites (QRD 400)	
For field grown and container grown non-food ornamentals, trees, Christmas trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, and tropical plants not destined for human or animal consumption in: Commercial Nurseries Greenhouses Lath-houses Shade-houses	**Official date registered:**

VII. Appendix B

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VIII. Appendix C

Product Labels

A. Manufacturing Use Product Label
B. End Use Product Label

A. Manufacturing Use Product

QRD 406

FOR FORMULATION INTO INSECTICIDE AND ACARICIDE PRODUCTS

FOR MANUFACTURING OR FORMULATION USE ONLY

Active Ingredient:

Extract of Chenopodium *ambrosioides* near *ambrosioides*	100.0%
Total:	100.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID	
If In Eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for further treatment advice.
If Swallowed	• Call poison control center or doctor for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If on Skin or Clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
CHEMTREC (800) 424-9300 (24 hours) Have the product container or label with you when calling a poison control center or doctor or going for treatment.	

See side/back panels for additional precautionary statements

EPA Reg No. 69592-ER EPA Establishment No. 69592-MEX-1

Net Contents: 1 gallon (128 fl. oz.) (3.8 L)
[4 gallon (15.2 L)]

Manufactured By:
AgraQuest, Inc.
1540 Drew Avenue
Davis, California 95618
(530) 750-0150

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Mixers, loaders and handlers must wear the appropriate personal protective equipment (PPE): coveralls, chemical-resistant gloves and protective eyewear. Remove and wash contaminated clothing before reuse.

ENVIRONMENTAL HAZARDS

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to aquatic invertebrates.

PHYSICAL OR CHEMICAL HAZARDS

Combustible. Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

QRD 406 is intended for use in the formulation of insecticides and acaricides to be applied to field and container-grown non-food ornamental plants in commercial nurseries, greenhouses, and lath- and shade houses.

This product may be used to formulate products for any additional uses not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA data submission requirements regarding the support of such uses. Products formulated from this technical material will require registration with the U.S. Environmental Protection Agency (EPA).

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Store in a cool dry place. Avoid freezing.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Do not contaminate water when disposing of equipment washwater or rinsate. Pesticide wastes may be toxic. Improper disposal of unused pesticide, washwater or rinse water is a violation of federal law.

Container Disposal: Nonrefillable container. Do not reuse or refill this container
Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration. Do not burn unless allowed by state and local ordinances.

B. End Use Product Label

QRD 400

Insecticide and Acaricide

FOR USE ON NON-FOOD ORNAMENTALS (TREES, SHRUBS, AND BEDDING PLANTS)
NOT FOR RESIDENTIAL USE

Active Ingredient:

Extract of Chenopodium *ambrosioides* near *ambrosioides*	25.0%
Other Ingredients	75.0%
Total:	100.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID	
If In Eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for further treatment advice.
In On Skin Or Clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
CHEMTREC (800) 424-9300 (24 hours) Have the product container or label with you when calling a poison control center or doctor or going for treatment.	

See side/back panels for additional precautionary statements

EPA Reg No. 69592-22 EPA Establishment No. 69592-MEX-1

Net Contents: 1 gallon (128 fl. oz.) (3.8 L)
[2.5 gallon (320 fl. oz.) (9.5 L)]

Manufactured By:
AgraQuest, Inc.
1540 Drew Avenue
Davis, California 95618
(530) 750-0150

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wear the appropriate Personal Protective Equipment (PPE).

PERSONAL PROTECTIVE EQUIPMENT

Applicators mixers, loaders and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks
- Protective eyewear
- Coveralls for high-pressure handwand and groundboom applicators.
- For greenhouse uses, applicators and other handlers must wear a NIOSH-approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE filter.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

● Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

● Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply when weather conditions favor drift or runoff from treated areas. Do not apply when a rain event is expected within 2 hours. Air blast applications must maintain a spray buffer of 15 feet from any waterbody. See the Directions for Use for details.

PHYSICAL OR CHEMICAL HAZARDS

Combustible. Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ THE ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH THE LABEL. FAILURE TO FOLLOW DIRECTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN CROP INJURY, POOR INSECT CONTROL, AND/OR ILLEGAL RESIDUES.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, greenhouses and handlers of agricultural insecticides. It contains requirements for training, decontamination, notification and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, nurseries or green houses.

Do not enter treated areas without protective clothing until spray has dried. Refer to Personal Protective Equipment section under the Precautionary Statements section.

GENERAL INFORMATION

QRD 400 is an Emulsifiable Concentrate (EC) Insecticide and Acaricide for Use on Field and Container-grown Non-Food Ornamental Plants in Commercial Nurseries, Greenhouses, and Lath- and Shade-houses. Not For Residential Use.

QRD 400 is a contact insecticide/acaricide for use in the control of aphids, plant-feeding mites,

whiteflies, mealy bugs, leafminers, thrips, fungus gnats, and tarnished plant bugs. QRD 400 can be applied to field and container-grown non-food ornamentals – trees, Christmas trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, and tropical plants.

MIXING AND APPLICATION INSTRUCTIONS

Do not apply this product by aerial application or through any type of irrigation system.

QRD 400 is toxic to aquatic invertebrates. Users must maintain the following buffer zones: Airblast spray applicators must not apply within 15 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds). Groundboom and airblast applicators must also account for wind direction and speed. Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 10 mph. Do not apply when a rain event is expected within 2 hours.

Shake container well before use. QRD 400 must be diluted with water for spray applications. Partially fill the spray tank with clean water, add the specified amount of QRD 400 to the tank (see table below), and finish filling the tank to the desired volume to obtain the proper spray concentration for the desired application rate per acre.

Gallons Water per Acre	**QRD 400 gallons 0.5% solution**	**QRD 400 gallons 1% solution**
25	0.12 (16 fl oz)	0.25 (32 fl oz)
50	0.25 (32 fl oz)	0.5 (64 fl oz)
75	0.37 (48 fl oz)	0.75 (96 fl oz)
100	0.5	1
For smaller quantities, mix at a rate of 0.65 – 1.3 fl. oz. QRD 400 per 1 gallon of water.		

Apply on a 7- to 14-day schedule as necessary. Apply QRD 400 at first sign of insect pressure or plant-feeding mite infestation. Use higher application rate under conditions of heavy pest pressure. Uniform coverage of both upper and lower leaves is critical for effective pest control. Avoid overspraying to the point of excessive runoff. Do not apply QRD 400 more than **10 t**imes per year.

QRD 400 can be applied with commonly used ground equipment, hose-end, pressurized, greenhouse, and hand-held sprayers.

Biological Control Agents: This product is compatible with the following biological control agents: *Encarsia formosa*, *Amblyseius fallacis*, *Phytoseiulus persimilis*, *Orius insidiosus, Aphidius colemani, Zetzellia mali, Neoseiulus fallacies, Typhlodromus pyri, Stethorus punctum,* lacewings, syrphid fly larvae, phytoseiid mite predators, aphid midges, lady beetles, and other predacious mites. Wait at least 2 hours after application before introducing new biological agents, or spray the evening before the day of introduction of new biological control agents.

AgraQuest is committed to the practice of sound resistance management programs that include rotation and tank mixing with other treatments having a variety of modes of actions.

Compatibility: Do not combine QRD 400 in the spray tank with other pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective and non-injurious under your use conditions.

To ensure compatibility of tank-mix combinations they must be evaluated prior to use. To determine the physical compatibility of this product with other products, use a jar test. Using a quart jar, add the proportionate amounts of the products to approximately one quart of water with agitation. Add dry formulations first, then flowables, then emulsifiable concentrates last. After thorough mixing, allow this mixture to stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank. Test the combination on a small number of plants to check for phytotoxicity before treating large areas. Do not use the combination if adverse effects are observed.

PLANTS EVALUATED FOR PHYTOTOXICITY

QRD 400 has been evaluated alone in a wide range of crops and ornamentals. However, since testing on all varieties of all ornamentals is not feasible, testing a small portion of the area to be treated for phytotoxicity is required before treating the entire area. Further, all possible combinations or sequences of pesticide sprays, including other fertilizers, surfactants, adjuvants and other pesticides, have not been tested, thus testing for compatibility and phytotoxicity of spray mixtures is required. Use the product in accordance with all label use directions. It is further required that spray equipment used to apply QRD 400 be thoroughly cleaned before use.

Phytotoxicity has occasionally been observed following the use of this product on flowers of Cyclamen, Gerbera, Begonia, and Impatiens. Do not use QRD 400 on flowering Cyclamen, Gerbera, Begonia, and Impatiens.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Store in a cool dry place. Avoid freezing.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Do not contaminate water when disposing of equipment washwater or rinsate. Pesticide wastes may be toxic. Improper disposal of unused pesticide, washwater or rinse water is a violation of federal law.

Container Disposal: Non-refillable container. Do not reuse or refill this container

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration. Do not burn unless allowed by state and local ordinances.

WARRANTY AND DISCLAIMER STATEMENT

AgraQuest warrants to those persons lawfully purchasing this product that at the time of the first sale of this product by Seller that this product conformed to its description and was reasonably fit for the purposes stated on the label when used in accordance with Seller's directions. Buyers and users of this product assume the risk of any use contrary to such directions. EXCEPT AS PROVIDED ELSEWHERE IN WRITING CONTAINING AN EXPRESS REFERENCE TO THIS WARRANTY AND LIMITATION OF DAMAGES, SELLER MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OR GUARANTY, INCLUDING ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR OF MERCHANTABILITY AND NO AGENT OF SELLER IS AUTHORIZED TO DO SO. Except to the extent prohibited by applicable law, AgraQuest offers this product with the following conditions: 1) buyers and users of this product assume the risk of any storage, handling or use contrary to AgraQuest's label and directions and 2) AgraQuest's liability shall in no case exceed the purchase price of the applicable AgraQuest product.